

## **CURRICULUM VITAE**

**A. Wallace Hayes, Ph.D., D.A.B.T., FATS, FIBiol, FACFE, FACN, ERT, CNS**

### **Education:**

Emory University, Atlanta, GA, A .B.

Auburn University, Auburn, AL, M.S.

Auburn University, Auburn, AL, Ph.D. 1967

Vanderbilt University, Nashville, TN, NIH Postdoctoral Fellowship in Toxicology

### **Short Bio:**

Dr. Hayes is a toxicologist with over 35 years of experience in industry and academics. He is a Senior Science Advisor at Spherix Consulting, providing strategic, scientific and regulatory guidance. Dr. Hayes also holds appointments at the Harvard School of Public Health as a Visiting Scientist and with the School of Public Health, University of Massachusetts, Amherst as a Research Professor. Previously, Dr. Hayes held the position of Vice President and Corporate Toxicologist for RJR Nabisco with responsibility for all regulatory and toxicology issues related to the safety of ingredients and food contact substances for food and drink products worldwide. Subsequently, as Corporate Vice-President of Product Integrity at the Gillette Company, he had management responsibility for the safety evaluation and regulatory compliance of a variety of consumer products, plant safety, environmental stewardship, and quality control. While at Gillette, Dr. Hayes was responsible for managing regulatory and toxicology issues worldwide. All contact substances used in Gillette products (including personal care products) were cleared within his division. Dr. Hayes previously served on the CTFA Research Council, addressing issues related to flavors and fragrances. Dr. Hayes has interacted with regulatory bodies worldwide including Canada, Japan, South Korea, EU and Latin America as well as the US FDA, the US EPA and the US DOD. Dr Hayes is currently a member of the Food Advisor Committee, US Food and Drug Administration.

Dr. Hayes holds degrees from Auburn University (Ph.D. and M.S.) and Emory University (A.B.). Dr. Hayes was a NSF predoctoral fellow at Auburn University, a NIH individual postdoctoral fellow at the Vanderbilt University School of Medicine, a NATO Senior Scientist at the Central Veterinary Laboratory in Weybridge, England and held a NIH Research Career Development Award. Dr. Hayes has held tenured Professorships at the University of Alabama, the University of Mississippi Medical Center and Wake Forest University School of Medicine. Dr. Hayes has served on committees and expert panels for the National Academy of Sciences, the National Institutes of Health, the Food and Drug Administration, the Environmental Protection Agency and the Department of Defense. Dr. Hayes has served on a number of GRAS Expert Panels. Dr. Hayes has authored more than 200 peer reviewed publications, is the co-editor of Hayes' Principles and Methods of Toxicology, 6th Edition, Human and Experimental Toxicology, Cutaneous and Ocular Toxicology and co-editor of the Target Organ Toxicity

Series. Dr. Hayes is the Editor-in-Chief, Food and Chemical Toxicology. Dr. Hayes is a past Secretary-General of IUTOX (two terms), past treasurer and board member of the American Board of Toxicology, a past president of the American College of Toxicology, the Toxicology Education Foundation, and the Academy of Toxicological Sciences and a past member of the council of the Society of Toxicology. Dr. Hayes is a diplomate of the American Board of Toxicology, the Academy of Toxicological Sciences, the American Board of Forensic Medicine, and the American Board of Forensic Examiners. He is a Fellow of the Academy of Toxicological Sciences, the Institute of Biology (UK), the American College of Forensic Examiners Institute and the American College of Nutrition. Dr. Hayes is a registered toxicologist in the European Union (ERT) and a certified nutrition specialist (food safety). Dr. Hayes was honored by the Society of Toxicology in 2006 with the Society's Merit Award, by the Mid-Atlantic Society of Toxicology with its Ambassador Award in 2012, by the American College of Toxicology in 2012 with its Distinguished Scientist Award and by the International Dose-Response Society in 2013 with its Outstanding Leadership Award. Dr. Hayes was named a Distinguished Fellow by the American College of Toxicology in 2013 and a Fellow by the American Association for the Advancement of Science in 2014.

### **Professional Experience:**

1966-1968: NIH Postdoctoral Fellow and Research Associate, Division of Toxicology, Vanderbilt University School of Medicine, Nashville, TN.

1968-1971: Assistant Professor; Department of Microbiology, University of Alabama, Tuscaloosa, AL.

1971-1975: Associate Professor, Department of Microbiology, University of Alabama, Tuscaloosa, AL.

1975: Professor, Departments of Microbiology and Biochemistry, University of Alabama, Tuscaloosa, AL.

1975-1976: Associate Professor, Department of Pharmacology and Toxicology, The University of Mississippi Medical Center, Jackson, MS.

1976-1980: Professor, Department of Pharmacology and Toxicology, The University of Mississippi Medical Center, Jackson, MS.

1975: Visiting Senior Scientist, Biochemistry Department, Central Veterinary Laboratory, New Haw, Weybridge, Surrey, U. K.

1977-1980: Director, NIEHS Training Program in Environmental Toxicology, The University of Mississippi Medical Center, Jackson, MS.

1979-1999: Visiting Professor, Department of Veterinary Public Health, Texas A & M University, College Station, TX.

1980-1984: Director of Toxicology Research, Rohm and Haas Company, Spring House, PA.

1984: Director of Regulatory Affairs, Agricultural Chemicals (Worldwide), Rohm and Haas, Philadelphia, PA.

1981-1984: Research Professor, Department of Physiology and Biophysics, School of Dentistry, Temple University, Philadelphia, PA.

1982-1984: Research Professor, Philadelphia College of Pharmacy and Science, Philadelphia, PA.

1984-1986: Corporate Toxicologist and Director, Biochemical and Biobehavioral Research, Bowman Gray Technical Center, R. J. Reynolds, Winston- Salem, NC.

1986-1987: Corporate Toxicologist and Group Director; Biochemical and Biobehavioral Research, Bowman Gray Technical Center, R. J. Reynolds, Winston-Salem, NC.

1986-1998: Research Professor, Department of Medicine and Toxicology Program, Duke University, Durham, NC.

1987-2010: Research Professor, Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.

1988 -2010: Adjunct Professor, School of Veterinary Medicine, V PI, Blacksburg, VA.

1987-1992: Corporate Toxicologist & Vice-President, Biochemical/Biobehavioral Research, Bowman Gray Technical Center, R. J. Reynolds, Winston- Salem, NC.

1992-1993: Professor and Director of Integrated Toxicology Program, Department of Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC.

1993-2012: Adjunct Professor, Department of Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC.

1994-2005: Research Professor, School of Public Health, University of Massachusetts, Amherst, MA

1997-: Adjunct Professor, Department of Pharmacology and Toxicology, University of Louisville School of Medicine, Louisville, KY.

1993-2002: Corporate Vice President, Corporate Product Integrity & Environmental, Health and Safety, The Gillette Company, Boston, MA.

2005-2007: Principal Science Advisor, Environ Corporation International, Arlington, VA

2007- . Principal Science Advisor, Spherix Incorporated, Bethesda, MD

2003-. Visiting Scientist, Department of Environmental and Occupational Health, Harvard School of Public Health, Boston, MA

2005-. Research Professor, School of Public Health, University of Massachusetts, Amherst.

2015-. Adjunct Professor, Center for Integrative Toxicology, Michigan State University

**Honors:**

- Eagle Scout, Boy Scouts of America, 1955
- NASA Predoctoral Fellowship, Auburn University, 1964-1966.
- NIH Postdoctoral Fellowship, Vanderbilt University, 1966-1968.
- NIH Research Career Development Award, University of Alabama, 1971-1976.
- NATO Senior Fellowship, Weybridge, England, 1977.
- President, American Society of Microbiology, Southeastern Branch, 1974; Vice President, 1973.
- Vice President, Sigma XI, Alabama Chapter, 1975.
- Outstanding Young Men of America, 1972.
- Danforth Associate, 1970-1975.
- Distinguished Lecturer, University of California, Davis, 1979.
- EPA Certificate of Merit, 1981.
- Council (elected), Society of Toxicology, 1982-1984.
- President, Mid-Atlantic Chapter, Society of Toxicology, 1983-1984.
- Vice President, Mechanism Section, Society of Toxicology, 1981-1983.
- Executive of the Year, Winston-Salem Chapter Professional Secretaries International, 1989-1990.
- Wisdom Hall of Fame, 1991.
- Honorable Order of Kentucky Colonels, 1991
- Editor Emeritus, Toxicology and Applied Pharmacology, 1986
- Council (elected), American College of Toxicology, 2003-2005
- Secretary-General (elected), International Union of Toxicology, 2004-2007; 2007-2010

- Vice President (elected), American College of Toxicology, 2006.
- President-elect (elected), American College of Toxicology, 2007
- President (elected), American College of Toxicology, 2008
- Chair, Program Committee, American College of Toxicology Program Committee, 2007
- Member (elected), Board of Directors, American Board of Toxicology, 2009-2012
- Treasurer (elected), Board of Directors, American Board of Toxicology, 2012
- Member (elected), Awards Committee, American College of Toxicology, 2012-2015
- Member, Board of Directors, Florida College, 2000-
- Member, Board of Directors, Institute of In Vitro Sciences, 2015-
- Merit Award, Society of Toxicology, 2006
- Ambassador Award, Mid-Atlantic Society of Toxicology, 2012
- Distinguished Scientist Award, American College of Toxicology, 2012
- Outstanding Leadership Award, International Dose-Response Society, 2013
- Distinguished Fellow (elected), American College of Toxicology, 2013
- Member (elected), Nominating Committee, International Union of Toxicology, 2013-2016
- AAAS Fellow (elected), American Association for the Advancement of Science, 2014

#### **Professional Society Memberships:**

- Society of Toxicology
- International Society of Regulatory Toxicology and Pharmacology
- American Society of Pharmacology and Experimental Therapeutics
- American Chemical Society
- American Society for Nutrition
- American Society for Microbiology
- American College of Toxicology

- American Society of Quality Council
- Sigma XI

### **Professional Specialty Boards:**

- Diplomate, American Board of Toxicology, 1981. Recertified, 1986, 1992, 1997, 2002, 2007, 2012
- Diplomate, The Academy of Toxicological Sciences, 1982. Recertified, 1987, 1992, 1997, 2002, 2007, 2012.
- Diplomate, Board Certified (Toxicology), Forensic Examiners, American Board of Forensic Examiners, 1995.
- Diplomate, Board Certified, Forensic Medicine, American Board of Forensic Medicine, 1996.
- Auditor, Environmental Management Systems Registrar Accreditation Board, 1999, Recertified, 2003.
- Registered Toxicologist (ERT), French Board for EUROTOX Registration of Toxicologist (Regulatory Toxicologist), 2004-2008; 2009-2014
- Certified Biologist, Society of Biology, UK
- Certified Nutritional Specialist (Food Safety), 1994; recertified 2005-2009; 2010-2014; 2014-2019

### **Professional Fellowships:**

- Fellow, The Academy of Toxicology. 1992.
- Fellow. The American College of Forensic Examiners, 1997.
- Fellow. Institute of Biology (United Kingdom), 1998.
- Fellow, Society of Biology (United Kingdom), 2009.
- Fellow, American College of Nutrition, 2012.

### **Editorial Posts:**

### Current

Editor-in-Chief, Food and Chemical Toxicology, 2011-

Editor-in-Chief, Ocular and Cutaneous Toxicology, 2001-

Editor for the Americas, Human and Experimental Toxicology, 1993 –

Editor-in-Chief Emeritus, Toxicology and Applied Pharmacology, 1987.

Series Editor, Target Organ Toxicity Series, CRC Press, 1989-

Associate Editor, Regulatory Toxicology and Pharmacology, 1986 -

Member, Editorial Board, Environmental Toxin Series, 1987-

Member, Editorial Board, Food and Chemical Toxicology, 1987-2010.

Member, Editorial Board, Mechanisms and Methods in Toxicology, 1990 -

Member, Editorial Board, Human and Ecological Risk Assessment, 1995 -

Member, Editorial Board, Non-linearity in Biology, Toxicology, and Medicine, 2003 –

Member, Advisory Editorial Board, Archives of Industrial Hygiene and Toxicology, 2007-

Member, Editorial Board, DARU Journal of Pharmaceutical Science, 2012-

Member, Editorial Board, Journal of Medical Hypotheses and Ideas, 2012-

Member, Editorial Board, Journal of Case Reports and Studies, 2013-

Member, Editorial Board, Journal of Toxicology and Health, 2014-

Member, Editorial Board, Journal of Veterinary Science and Research, 2014-

Member, Editorial Board, MOJ Toxicology (Open Access), 2014 -

[<http://medcraveonline.com/MOJT/editorial-board>]

Member, Editorial Board, Journal of Toxicology and Risk Assessment, 2015-

### Previous

- Founding Editor, Comments on Toxicology, 1986-2003
- Editor, Toxicology and Applied Pharmacology, 1981-1986.

- Associate Editor, Toxicology and Applied Pharmacology, 1980.
- Member, Editorial Board, Toxicology and Applied Pharmacology, 1978-80.
- Member, Editorial Board, Journal of Toxicology and Environmental Health, 1979-1993.  
Member, Editorial Board, Toxicology, 1978-1983.
- Member, Editorial Board, Journal of Quality Assurance, 1990 – 2009.
- Member, Editorial Board, Environmental Toxin Series, 1987-2008
- Member, Editorial Council, Toxicon, 1980-1989.
- Member, Editorial Board, Archives of Environmental Contamination and Toxicology, 1987-2000.

#### **Advisory Posts:**

Member, Program Committee, Society of Toxicology, 1974-76.

Member, Technical Committee, Society of Toxicology, 1976-80.

Co-Chairman, Technical Committee, Society of Toxicology, 1977-78.

Chairman, Technical Committee, Society of Toxicology, 1978-79.

Co-Chairman, Technical Committee, Society of Toxicology, 1979-80.

Member, Awards Committee, Society of Toxicology, 1982-1983.

Elected Member, Membership Committee, Society of Toxicology, 1980-81.

Elected Member, Education Committee, Society of Toxicology, 1981-83.

Council (Elected), Society of Toxicology, 1982-1984.

Past President, Mid-Atlantic Chapter, Society of Toxicology, 1984-1985.

President, Mid-Atlantic Chapter, Society of Toxicology , 1983-1984.

Vice President-elect, Mid-Atlantic Chapter, Society of Toxicology, 1982-83.

Vice President, Mid-Atlantic Chapter, Society of Toxicology, 1981-82.

Vice President, Mechanism Section, Society of Toxicology, 1981-82, 1982-83.

Member, Committee on Environmental Pharmacology, American Society for



Pharmacology and Experimental Therapeutics, 1976-82.

Chairman, Committee on Environmental Pharmacology, American Society for Pharmacology and Experimental Therapeutics, 1981-82.

Member, Subcommittee on Toxicology, Committee on Educational Affairs, American Society for Pharmacology and Experimental Therapeutics, 1981-83.;

Member, Liaison Committee between ASPET/SOT, American Society for Pharmacology and Experimental Therapeutics, 1981-1985.

Chairman, ASPET/SOT Organizing Committee, External Program in Toxicology, 1979-1982.

Member, Environmental Microbiology Committee, American Society for Microbiology, 1975-76.

Southeastern Branch, American Society for Microbiology, P. R. Edwards Award Committee, Member, 1972. Elizabeth O. King Award Committee, Member, 1973.

P. R. Edwards Award Committee, Chairman, 1975. Committee for Carski Award Nomination, Chairman, 1977. (Dr. M. Green, University of Alabama, was honored with the award by the American Society of Microbiology).

Member, Committee on Chemistry and Public Affairs Task Force on TSCA, American Chemical Society, 1977 -80.

Collaborator, Inter-laboratory Collaborative Study for Aflatoxin B, Food and Drug Administration, 1977.

Collaborator, Aflatoxin Check Sample Survey, International Agency for Research on Cancer, 1978.

Member, Target Organ Toxicity Conference Steering Committee, 1978-1988.

Member, Panel on Equivalent Safety Concept of Maritime Hazardous Materials,

National Materials Advisory Board, National Academy of Sciences, 1979-82.

Member, Tox-80's Commission, Society of Toxicology.

Member, Safe Drinking Water Committee, Board of Toxicology and Environmental Health Hazards, National Academy of Science, 1979-81.

Member, Committee on Chemistry and Public Affairs Task Force on TSCA, American Chemical Society, 1980-1992.

Member, Florida College National Council, Florida College, Temple Terrace, FL, 1980- 1998.

Member, U.S.D.A. Research Program Review Team, Texas A&M University, 1981.

Member, Environmental Health Sciences Review Committee NIEHS, 1981-1985.

Member, Scientific Program Committee, International Congress of Toxicology (ICT III), 1982-1983.

Member, Testing Task Group, CMA, 1981-1984.

Member, Publication Committee, International Union of Toxicology 1981-1983. . Member, Toxicology Advisory Board, Raven Press, New York, NY, 1982-.

Member, Chemical Systems Laboratory Toxin Defense Group Review Panel, U.S. Army, 1982.

Member, *TDB/CIS* User Assessment Panel Life Sciences Research Office, FASEB, Bethesda, MD, 1982.

Alternate Delegate, International Union of Toxicology, 1982-1983.

Advisor, U.S. Army Medical Command, 1982-1984.

Member, Task Force. Peer Review of Scientific Basis for Regulatory Decisions, American Chemical Society and Conservation Foundation, 1984-1985.

Delegate, International Union of Toxicology, 1984-1986.

Trustee, American Association for Accreditation of Laboratory Animal Care. 1983 -1989.

Consultant, Walter Reed Army Institute of Research, 1984-1986.

Member, Publication Committee, International Union of Toxicology, 1984-1986. .Member, Saccharin Technical Committee, International Life Sciences Institute, 1984-1986.

Member, Selection Committee, The Immunotoxicology Foundation, 1986.

Member, Advisory Board, Risk Assessment Center, Duke University Medical Center, 1986-1992.

Member, Commission on Communications, International Union of Toxicology, 1986-1989.

Member, Program Committee, Toxicology Forum, 1986-1987.

Member, Student Awards Committee Mechanism Section, Society of Toxicology, 1968-1987.

Faculty, Principles and Practices of Industrial Toxicology, Wayne State University, 1987.

External Advisory Committee, Food Science and Nutrition, Texas A&M University, College Station, Texas, 1987.

Member, Advisory Council, Auburn University College of Science and Mathematics, 1987-1997.

Member, Board of Directors Center for Indoor Air Research, 1990-1992.

Member, Advisory Committee, Biological Effects of Low Level Exposures, Amherst, MA, 1989.

Chairman, Steering Committee, Science and Mathematics Alliance (NSF), North Carolina Western Region, 1990-1993.

Member (elected), Board of Directors, The Academy of Toxicological Sciences,

1993-1996; 1996-1999; 1999-2002 (Vice President, 2000-2001, President, 2001-2002); 2008-.

Member (elected), Committee for Toxicology Division, American Society for Pharmacology and Experimental Therapeutics, 1993-1994. Chairman, Nomination Subcommittee, 1994.

Member, Committee on Occupational Health and Safety in Animal Care Facilities, National Academy of Sciences, 1993-1994.

Member, Advisory Board, Drugs and the Body, Tulane University, 1994-1997.

Member, Advisory Committee, Program on Environmental Toxicology, VPI, 1994-2010.

Member, Environmental Committee, U.S. Chamber of Commerce, Washington, D.C., 1994-2000.

Faculty, Principles of Risk Assessment from Chemical Exposure, Lodz, Poland, 1995

Faculty, Risk Assessment Summer School III, IUTOX, Capri, Italy, 1990.

Faculty, Risk Assessment Summer School IV, IUTOX, Bermuda, 1992.

Faculty, Risk Assessment Summer School V, IUTOX, England, 1994.

Faculty, Risk Assessment Summer School VI, IUTOX, Thailand, 1996.

Faculty, Risk Assessment Summer School VII, IUTOX, Sweden, 1998.

Faculty, Risk Assessment Summer School VIII, IUTOX, Spain, 2000.

Faculty, Risk Assessment Summer School IX, IUTOX, Malta, 2002.

Faculty, Risk Assessment Summer School X, IUTOX, Germany, 2004

Faculty, Risk Assessment Summer School XI, IUTOX, Germany, 2006

Faculty, Risk Assessment Summer School XII, IUTOX, Germany, 2007

Faculty, Risk Assessment Summer School XIII, IUTOX, Germany, 2008

Faculty, Risk Assessment Summer School “Memories”, IUTOX, Germany 2010

Faculty and Co-director, Risk Assessment Workshop, Sao Paulo, Brazil, 2008, 2009, 2010, 2011, 2013, 2014

Member, Comite De Honor [Honorary Committee], Alternativas 2001. First Caribbean and Latin American Workshop on Alternative Methods, Convention Centre Heredia, Santiago de Cuba, December 4-5, 2001.

Faculty, Chemical Risk Evaluation Course, National Agency for Food and Drug Administration and Control, Abuja, Nigeria, August, 2009, 2010, 2012

Faculty, Health Risk Assessment, NIOH and University of the Witwatersrand, Johannesburg, South Africa, 2010

Faculty, Risk Assessment, University of Khartoum, Sudan, 2010.

Faculty, Analyzing Risk: Science, Assessment, and Management, Toxicology for Risk Analysis. Harvard School of Public Health, Boston, MA 2004, 2005, 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015

Faculty, Toxicology for Industrial and Regulatory Scientists. Basic Principles of Toxicology, American College of Toxicology, Falls Church, VA. April 2010, 2011, 2012, 2013, 2014, 2015

Faculty, Practical Application of Toxicology in Drug Development, Principles of Toxicology, American College of Toxicology and British Society of Toxicology, Edinburgh, UK September 2013, 2014

Member, Board of Directors, Center for Alternatives to Animal Testing, Johns Hopkins, 1995-.

Member, Board of Directors, Join Hands, The Health and Safety Alliance, 1995-2002.

Member, Validation Criteria Committee, Validation and Regulatory Acceptance of Alternative Toxicology Test Methods, National Toxicology Program, December 11-12, 1995.

Participant, OECD Workshop On Harmonization of Validation and Acceptance Criteria for Alternative Toxicological Test Methods, January 22-24, 1996. Solna, Sweden.

Member, Animals in Research Committee, Society of Toxicology, 1996-1999.

Chairman, Animals in Research Committee, Society of Toxicology, 1998-99.

Member External Advisory Board, Louisiana Institute of Toxicology, 1996-2009.

Participant, White House Conference on the Environment, Washington, D.C., 1996.

Member (elected), Education/Continuing Education Committee, American College of Toxicology, 1996-1999.

Member, Advisory Committee, Harvard School of Public Health, 1996-2003.

Member, Board of Trustees, Toxicology Education Foundation, Society of Toxicology, 1997 - 2001. (Vice President, 1997 -98; President, 1998-2000), 2009-2017.

Member, Scientific Advisory Board, Institute of *In Vitro* Sciences, Inc., Gaithersburg, MD, 1997-2002.

Member, Advisory Committee, 3rd World Congress on Alternatives and Animal Use in the Life Sciences, Bologna, Italy, 1998-1999.

Member, Commission on Strategic Development, IUTOX, 1997-1999.

Member, Advisory Committee on Alternative Toxicological Methods, NIEHS, 1998-2001.

Member, Peer Review Panel, Corrositex: An *In Vitro* Method for Assessing Dermal Corrosivity Potential of Chemicals, NIEHS, 1999.

Member, Scientific Advisory Executive Committee, The Cosmetic, Toiletry, and Fragrance Association, 1999-2002.

Member, Up and Down Procedure Peer Review Panel, NIEHS, 2000.

Member, Peer Review Panel, Acute Toxicity Test Method, NIEHS, 2000.

Invited Expert, International Workshop On *In Vitro* Methods For Assessing Acute Systemic Toxicity, EPA/NIH, October 17-19, 2000.

Member, Program Advisory Committee, ICLAS-CCAC International Symposium on Regulatory Testing And Animal Welfare, Quebec, Canada, June 21-23, 2001.

Group Leader, Acute Toxicity Testing (Local: Skin/Eye), ICLAS-CCAC International Symposium on Regulatory Testing And Animal Welfare, Quebec City, Canada, June 22, 2001.

Council (elected), American College of Toxicology, 2002-2005.

Member, Scientific Advisory Committee on Alternative Toxicological Methods, NIEHS, 2002-2005.

Member, Board of Trustees, Scientists Center for Animal Welfare, Greenbelt, Maryland, 2004-2007, 2007-2010, Secretary, 2010-2013

Member, Scientific Expert Panel for Environmental Biomonitoring for Water. U.S. Army, 2004-.

Member, FIFRA Scientific Advisory Panel, Consultation on Dermal Sensitization Issues for Exposures to Pesticides May 4-6, 2004, Alexandria, VA

Member, Board of Trustees, Toxicology Education Foundation, Reston, VA, 2004-2007, 2007-2010

Member, ICCVAM Ocular Expert Panel, Interagency Coordinating Committee on the Validation of Alternative Methods, Validation Status of Four *in vitro* Ocular Assays, Jan. 11-12, 2005, Bethesda, MD

Secretary-General (elected), International Union for Toxicology, 2004-2007. 2007-2010

Chairperson, Communication Commission, IUTOX, 2004-2007, 2007-2010

Editor, IUTOX Newsletter, 2004-2007, 2007-2010

Member, Federal Insecticide, Fungicide and Rodenticide Act, Scientific Advisory Panel, Comparison of Results of Studies on Pesticides from 1-or 2-Year Dog Studies with Dog Studies of Shorter Duration”, May 5-6, 2005, Arlington, VA

Chair, Executive Committee, International Hormesis Society, Amherst, MA 01003, 2005-

Chair, Toxicology Review Panel, World Library of Toxicology, National Library of Medicine, 2005-2009

Member, International Scientific Advisory Committee, International Conference on Toxicology, Environmental and Occupational Health, Lucknow, India, November, 2005.

Chairperson, Continuing Education Committee, EUROTOX2006/6CTDC, Cavtat/Dubrovnik, Croatia, September 20-24, 2006

Member, Scientific Program Committee, Turkish Society of Toxicology Annual Meeting, Ankara, Turkey, November 2-6, 2006

Member, International Advisory Committee, 4<sup>th</sup> International Congress of Asian Societies of Toxicology, June 18-21, 2006, Zhuhai, China

Member, National Institute of Environmental Health Sciences Special Emphasis Panel, Fogarty Training Grants, October 16-17, 2006, Durham, North Carolina

Member, International Advisory and Scientific Committee, 6<sup>th</sup> International Congress, Turkish Society of Toxicology, November 2-4, 2006, Antalya, Turkey

Member, Scientific Steering Group, 1<sup>st</sup> International Forum Toward An Evidence-Based Toxicology (EBT), October 15-18, 2007, Cernobbio, Italy

Member, Scientific Advisory Committee on Alternative Toxicological Methods Working Group for the NICEATM-ICCVAM Five-Year Plan, 2007

Member, Scientific Advisor Board, CeeTox, 2007-2014.

Co-Chair: Symposium 9: Metabonomics: Applying a New Approach to Basic and Clinical Toxicology. 11<sup>th</sup> International Congress of Toxicology, July 15-19, 2007, Montreal, Canada

Co-Chair: Continuing Education Course, Methods of Toxicological Risk Assessment in Food Safety, 44<sup>th</sup> EUROTOX Congress, Amsterdam, The Netherlands, October 7, 2007

Member (invited), Workshop on Acute Chemical Safety Testing: Advancing In Vitro Approaches and Humane Endpoints for Systemic Toxicity Evaluations, NIEHS, Bethesda, MD, February 6-7, 2008

Member, Science Review Board (EQPA), Environmental Protection Agency, 2007-2011.

Co-Chair, Key Pathways for Acute Systemic Toxicity, Workshop on Acute Chemical Safety Testing: Advancing In Vitro Approaches and Humane Endpoints for Systemic Toxicity Evaluations, NIEHS, Bethesda, MD, February 6-7, 2008

Co-Chair, Continuing Education Course, Medicine: Coming Soon to A Refrigerator Near You, American College of Toxicology, 29<sup>th</sup> Annual Meeting, November 9, 2008.

Member, Board of Directors, American Board of Toxicology, Raleigh, NC. 2008-2012

Member, WHO/IPCS Harmonization Project Training Group, 2008-2012.

Member, ECVAM/ESAC Peer Review Panel for the four cytotoxicity/cell-function based in vitro assays proposed to assess eye irritation: Cytosensor Microphysiometer., Fluorescein Leakage Assay, Red Blood Cell Hemolysis Assay, and the Neutral Red Release Assay. April 6-8, 2009.

Chair, NIEHS/ICCVAM and NICEATM AMCP Peer Review Panel, May 18-22, 2009, Bethesda, MD

Member, CDC Special Grant Review Panel, 2008, 2009, 2010.

Chair, International Advisory Committee, 7<sup>th</sup> Congress of Toxicology in Developing Countries, Sun City, South Africa, September 6-10, 2009.

Member, International Scientific Program Committee, XII International Congress of Toxicology, Barcelona, Spain, July 19-23, 2010

Member, ECVAM Scientific Advisory Committee (ESAC). European Commission - Joint Research Centre (JRC), Ispra, Italy, 2010-2013.

Reviewer, Interim Report of the Committee on Acute Exposure Guideline Levels, US National Research Council, 17<sup>th</sup>, 18<sup>th</sup>, 2009, 2010, 2011, 2012, 2013.

Listed as Scientific Expert, Joint FAO/WHO Committee on Food Additives (JECFA), 2011-2015.

Chair (Moderator), Symposium: Nutrients in Clinical Practice: Regulatory and Quality Issues, American College of Nutrition, Morristown, NJ, November, 2011.

Chair (Moderator), Symposium: Path Forward for New Food Ingredients, International Food Technology, Las Vegas, NV, June 26, 2012.

Member, International Scientific Program Committee, XIII International Congress of Toxicology (ICT 2013), June 30 to July 4, 2013 at the Coex in Seoul, Korea.

Member, Globalization Committee, American Board of Toxicology. 2012-14

Chair, The NTP Panel Evaluating the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM). RTP, NC. 2012.

Member, External Advisory Committee, Center for Child Environmental Health Risks Research, University of Washington, Seattle, Washington, 2012-2014.

Member, Food Quality Protection Act Science Review Board, US EPA. 2012-

Member, Globalization Committee, American Board of Toxicology, 2014-

Member, International Advisory Board, NanoSafety Congress, Tehran, Iran, February 19-20, 2014.

Member, US Food and Drug Administration, Food Advisory Committee, MD. 2013-2017.

Chair (Moderator) Symposium: GRAS...Another Generation for Safety Assessment? International Food Technology. New Orleans, June 2014

Chair, Symposium: Systems Toxicology: the Future of Risk Assessment. American College of Toxicology. Orlando, FL. November 2014.

Invited Speaker, Workshop on GRAS Determinations. International Society of Regulatory Toxicology and Pharmacology. Washington, DC. October 14, 2014.

Subject Matter Expert, Member Panel on Update and Validate Risk Ranking Model to Inform High Risk Food List. Institute of Food Technologists (US FDA Project). 2015.

Guest Faculty, Introduction to Food and Drug Toxicology, RSCE525. International Center for Regulatory Sciences, School of Pharmacy, University of Southern California, Spring 2015

Chair/Speaker, Workshop Session: Infant Formula Nutrition: Regulatory and Safety Evaluation of Ingredients, Society of Toxicology, San Diego, CA, March 23, 2015.

Speaker, What's New in Washington DC? Food and Dietary Supplement Hot Topics Forum, Balboa Bay Resort, Newport Beach, CA. March 25, 2015.

Speaker, Role of the Biological Sciences, Signature Session: Application of the Sciences to Address Societal Interests in Food. 2015 Grocery Manufacturers Association, Gaylord National Harbor, National Harbor, MD, April 13, 2015.

Chair, Systems Toxicology: Future of Risk Assessment. 7<sup>th</sup> International Congress of Asian Society of Toxicology, Jeju Island, South Korea, June 26, 2015.

Session Chair/Speaker, How Good is Your Food Supply Chain at Reducing and Preventing Contaminants? IFI, Chicago, July 13, 2015.

Course Director and Faculty, International Workshop on Comprehensive Toxicology (IW-CT-2015) July 27-31, 2015, Bengaluru, India

Chair/Speaker, Why GRAS? Modern Risk Assessment in Food Safety [CEC]. EUROTOX 2015, Porto, Portugal, September 13, 2015

Member, FDA Pediatric Advisory Committee [Food Safety & Pediatric Population], September 14-15, 2015. Washington, DC.



Invited Speaker, What is New? Supply Side West, Las Vegas, October 8, 2015.

Member [Voting], Joint Committee on Generally Recognized as Safe Publicly Available Standards, NSF International, Michigan, 2015-

**Generally Recognized as Safe [GRAS] Expert Panel Member for more than 20 GRAS including the following GRAS Notifications to US FDA**

Generally Recognized as Safe (GRAS) Determination for the Use of Galacto-Oligosaccharides (GOS) in Foods and Infant Formulas for Term Infants, March, 2007

Generally Recognized as Safe (GRAS) Determination for the Use of Galacto-Oligosaccharides (GOS) in Foods and Infant Formulas, February, 2010

Generally Recognized As Safe (GRAS) Determination for Bovine Lactoferrin as a Component of Cow's Milk-Based Infant Formula and Cow's Milk Products. June, 2011.

**Reviewer for Scientific Journal:**

- Advances in Chemistry Series
- Analytical Biochemistry
- Applied and Environmental Microbiology
- Applied Microbiology and Biotechnology
- Archives of Environmental Contamination
- Canadian J. Microbiology
- Cancer Research
- Critical Reviews in Toxicology
- Environmental and Experimental Botany
- Environmental Mutagenesis
- European Journal of Applied Microbiology
- Federation Proceedings
- Fundamental and Applied Toxicology
- General Physiology and Biophysics

- Human and Ecological Risk Assessment
- Human and Experimental Toxicology
- Journal Association of Official Analytical Chemists
- Journal Environmental Pathology and Toxicology
- Journal of Agricultural and Food Chemistry
- Journal of Diabetes and its Complications
- Journal of Eye Research
- Journal of Food Protection
- Journal of Food Science
- Journal of Pharmacology and Experimental Therapeutics
- Journal of the National Cancer Institute
- Journal of Toxicology and Environmental Health
- Journal of Toxicology-Cutaneous and Ocular Toxicology
- Pesticide Biochemistry and Physiology
- Toxicology
- Toxicology and Applied Pharmacology
- Toxicon

## **Institutional**

### **University of Alabama**

Lloyd Hall Safety Committee, College of Arts and Sciences, 1969-1971, Department of Microbiology Screening Committee for Departmental Chairman,

College of Arts and Sciences, 1970-1971.

Committee on Research and Service, College of Arts and Sciences, 1969-1971. Chairman, Committee for Development of Drafting Facilities, The University of Alabama, 1970-1972.

Psycho-Physical Measurement Program Committee, 1970-1971.

Radioisotope Committee, 1970-1972.

Committee on Academic Quantifications, College of Arts and Sciences Faculty Senate, 1971-1973.

Health Careers Studies Committee, 1970-1975.

New College Review Committee, 1971-1973.

Faculty Ombudsman Committee, 1972-1974.

Advisory Committee on Humane Care of Laboratory Animals, 1971-1975. Student Academic Affairs, College of Arts and Sciences, 1971-1973.

Chairman, Standard X, Graduate Education, Self-Study, The University of Alabama, 1972-1974.

Elected member, Executive Committee College of Arts and Sciences Faculty Senate, 1972-1973.

Biochemistry Development Committee, College of Arts and Sciences, 1971-1973.

Chairman, Budget Committee, College of Arts and Sciences, Faculty Senate, 1973-1974.

Elected member, Executive Committee, College of Arts and Sciences Faculty Senate, 1973-1974.

Department of Microbiology Tenure and Promotion Committee, College of Arts and Sciences, 1973-1975.

Graduate Council, 1973-1975.

Natural Resources Center Committee on Research Programs, 1974-1975. Science Lecture Series, 1974-1975.

Elected member, Executive Committee, College of Arts and Sciences Faculty Senate, 1974-1975.

### **University of Mississippi Medical Center**

Curriculum Study Committee of the Graduate Studies Program, 1975.

Advisory Committee for the Graduate Studies Program, 1976-1978.

Medical Center Animal Research Committee, 1976-1979.

Chairman, Medical Center Animal Research Committee, 1977-1979.

Microbiology Chairman Search Advisory Committee, 1978-1979.

Chairman, Microbiology Chairperson Search Advisory Committee, 1978-1979.

Ad hoc Committee on Environmental Pollution, University Medical Center, 1977.

Elected Representative of School of Medicine to Faculty Senate, 1977-1980.

Self-Study, Standard X Graduate Education, The University of Mississippi Medical Center, 1978-1979.

LCME Accreditation Review, Basic Science Departments Committee, 1978-1979. Biohazards Committee, 1978-1980.

Departmental Review Committee, Department of Preventive Medicine, 1980.

Committee on Admissions, Sigma XI, 1980.

### **Rohm and Haas**

Member, Research Safety and Health Committee, 1981-1984.

### **RJR Nabisco**

Chairman, Occupational Safety and Product Quality Committee, 1984-1988.

Member, Medical Research Committee, 1986-1989.

Program Director, RJR Nabisco Research Scholars Award, Pulmonary Medicine, 1986-1991; Immunology, 1988-1991.

### **Wake Forest University School Of Medicine**

Chairman, Integrated Toxicology Program 1992-1993

Member, Nutrition Center 1992-1993

### **The Gillette Company**

Secretary, Corporate Quality Committee, 1993-2002.

Chairman, Corporate Committee on Health, Environment and Safety, 1993-2002.

Member, Corporate Risk Management Committee, 1994-2002.

## **Harvard University**

Harvard School of Public Health (2003-2010)

Course director, Principles of Toxicology, EH 450

Harvard Extension School

Co-course director, Risk and Life Cycle Assessment, ENVR E- 150

Course director, Environmental Toxicology and Risk Management, ENVR E- 159

Course director, Research Methods for Thesis Development, ENVR E-200

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9. Hayes, A. W., P. Wyatt and P. A. King, 1970. Environmental and nutritional factors affecting the production of rubratoxin B by *Pencillium rubrum* Stoll. Appl. Microbiol. 20: 469-473.

10. Hayes, A. W. 1972. Excretion and tissue distribution of radioactivity from rubratoxin B14 C in mice and rats. *Toxicol. Appl. Pharmacol.* 23: 91-101.
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12. Cone, E. J., R. H. Gardner and A. W. Hayes. 1972. Spectra studies on cyclic enamino ketones. *J. Org. Chem.* 37: 4436-4439.
13. Hayes, A. W., E. B. Hollingsworth and J. A. Neville, 1973. Acute toxicity of rubratoxin B in dogs. *Toxicol. Appl. Pharmacol.* .25: 606-616.
14. Hayes, A. W. and C. J. Hannon. 1973. Effects of rubratoxin and aflatoxin on oxygen consumption of Krebs cycle intermediate. *Toxicol. Appl. Pharmacol.* .25: 30-41.
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16. Hayes, A. W. and C. E. Hunter. 1973. Effects of rubratoxin B on acid phosphatase and B-glucuronidase. *Res. Commun. Chm. Pathol. Pharmacol.* 6: 759-762.
17. Mego, J. L. and A. W. Hayes. 1973. The effects of some fungal toxins on the uptake and degradation of formaldehyde-treated 125 I-albumin in mouse phagolysosomes. *J. Reticuloendothelial Society.* 13: 351-352.
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219. Hula, JE and AW Hayes. 2014. Mechanisms of Toxicology. Reference Module in Biomedical Sciences. Elsevier. 18-Oct-2014 doi: 10.1016/B978-0-12-801238-3.00204-X; pages 1-13.
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224. Kourtas, D, AM Tsatsakis, JL Domingo and A. Wallace Hayes. 2013. Mechanisms involved in oxidative stress regulation. *Fd Chem Toxicol*. 61: 1-2.
225. Hayes, A. Wallace. 2013. Scientifically unfounded precaution drives European Commission's recommendations on EDC regulation, while defying common sense, well-established science and risk assessment principles. *Fd Chem Toxicol* 62: 1-4.
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232. Osimitz, Thomas G. , Michael L. Dourson, A. Wallace Hayes, and Sam Kacew. 2014. Crystallographic Analysis and Mimicking of Estradiol Binding: Interpretation and Speculation. *Environmental Health Perspectives*. 122: 91-92.
233. Marroquín-Cardonaa, A.G. , N.M. Johnson, T.D. Phillips , and A.W. Hayes. 2014. Mycotoxins in a changing global environment – A review. *Food and Chemical Toxicology*. 69: 220–230.
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238. Sauer, JM, Thomas Hartung, Marcel Leist, Thomas B. Knudsen, Julia Hoeng and A. Wallace Hayes. 2015. Systems Toxicology: The Future of Risk Assessment. *International Journal of Toxicology* 34:346-348.
239. Hayes, A. Wallace, CL Kruger, and RA Clemens. 2015. Understanding the Difference. *Food Safety Magazine.* [in press].
240. Hula, JE, SC Sahu and A. Wallace Hayes. 2015. Nanotechnology: History and Future. *Human and Experimental Toxicology* [in press]

## **BOOKS**

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- Hayes, A. W. (Editor). 1982. *Principles and Methods of Toxicology*, 1st Edition, Raven Press, New York, NY 10036
- Hayes, A. W., R. C. Schnell, and T. Miya (Editors). 1983. *Developments in the Science and Practice of Toxicology*. Elsevier Science Publishers Amsterdam, The Netherlands.
- Hayes, A. W. (Editor). 1985. *Toxicology of the Eye, Ear and Other Special Senses*. Raven Press, New York, NY 10036
- Hayes, A. W. (Editor). 1989. *Principles and Methods of Toxicology*, 2nd Edition, Raven Press, New York, NY 10036
- Crapo, J. D., E. D. Smolko, J. A. Graham, F. J. Miller and A. W. Hayes (Editors). 1989. *Extrapolation of Dose-Response Relationships for Inhaled Particles and Gases*. Academic Press, Inc., New York, NY 10082
- Hayes, A. W. (Editor). 1994. *Principles and Methods of Toxicology*, 3rd Edition, Raven Press, New York, NY 10036
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- Hayes, A. W. (Editor). 2001. *Principles and Methods of Toxicology*, 4th Edition, Taylor & Francis, Philadelphia, PA.

Hayes, A. W. (Editor). 2004. Toxicology in the New Century—Opportunities and Challenges. Proceedings of the 5<sup>th</sup> Congress of Toxicology in Developing Countries. Toxicology 198:1-360. Elsevier, Amsterdam, The Netherlands.

Hayes, A. W. (Editor). 2008. Principles and Methods of Toxicology, 5<sup>th</sup> Edition, Taylor & Francis, Philadelphia, PA

Hayes, A.W. and Kruger, C. L. (Editors). 2014. Hayes' Principles and Methods of Toxicology, 6th Edition, CRC Press, FL

## LETTERS TO THE EDITOR

Nelson, D. B., Kimbrough, R. D., Landrigan, P. S., Hayes, A. W. Yang, G. C., and Bernanides, J. 1981. Aflatoxin and Reye's Syndrome -A case study-reply. Ped. 68: 473.

Hayes, A. W. 1988. Criticisms of Premier is a Smoke Screen. St. Louis Dispatch. Dec.8.

Hastings, K.L. and A. W. Hayes. 2008. Editorial. IJT 27: 399.

Hayes, A. W. 2011. Editorial. Food and Chemical Toxicology 49: 323.

## INVITED PRESENTATIONS

Wilson, B. J. and A. W. Hayes. 1968. "Mycotoxins from *Penicillium*." 68th Annual Meeting of the American Society for Microbiology. Detroit, MI, May 6.

Hayes, A. W. 1972. "Environmental and nutritional factors affecting production of rubratoxin B by *Penicillium rubrum* Stoll." International Union of Pure and Applied Chemistry (IUPAC) sponsored Symposium on Control of Mycotoxins. KuvgaJv (Goteberg,), Sweden, August 21.

Hayes, A. W. and R. D. Hood. 1974. "Mycotoxin induced developmental abnormalities in mice." International Union of Pure and Applied Chemistry (IUPAC) sponsored Symposium on Mycotoxins in Food. Pulawy, Poland, August 24.

Hayes, A. W. 1974. "Toxicology of rubratoxin B." International Union of Pure and Applied Chemistry (IUPAC) sponsored Symposium on Mycotoxins in Food. Pulawy, Poland, August 24.

Hayes, A. W. 1976. "Isolation and Detection of Multiple Mycotoxins." Gordon Research Conferences. Fungal Metabolites.

Hayes, A. W. 1976. Rubratoxin B. Mycotoxin Conference. Washington, D.C., October 7 -9.

Hayes, A. W. 1977. Organizer and Convener, Mycotoxins: A real or potential problem. American Society for Microbiology Annual Meeting. New Orleans, May 9.



Hayes, A. W. 1977. Biological Activities of Mycotoxins, 2nd International Mycological Congress. Tampa, Flt September 2

Hayes, A. W. 1978. Co-organizer and Co-convener with W. O. Berndt: Transport Processes as Sites of action for Chemicals. American Society for Pharmacology and Experimental Therapeutics and Society of Toxicology. Houston, TX., August 15.

Hayes, A. W. 1978. Mycotoxins in the Environment: The Potential Hazard. Sigma Xi Lecture. Jackson, MS, October 19.

Hayes, A. W. 1978. Co-organizer and Co-convener with D. T. O'Callaghan: Symposium on Carcinogenesis. University of Mississippi Medical Center. Jackson, MS, April 20.

Hayes, A. W. 1980. Mycotoxin: Examples of Food-borne diseases. ASPET Meetings, Rochester, MI.

Hayes, A. W. 1980. Roundtable on Collaborative Testing in Toxicology, AOAC. Washington, DC, October 21.

Phillips, T. D., G. D. Hanna, N. D. Heidelbaugh, S. J. Cysewski, L. F. Kubena, G. W. Ivie, and D. A. Witzel. 1980. Detection of penicillic acid residues in poultry utilizing high-pressure liquid chromatography. Presented at the Public Health Session of 1980. AVMA, Washington, D.C.

Heidelbaugh, N. D., T. D. Phillips, A. W. Hayes and J. H. Steele. 1980. Mycotoxins: An emerging food safety issue. Presented at the Food and Water-Borne Disease - American Public Health Association Annual Meeting. 4:10 p.m., Monday, October 20, 1980, Detroit, MI.

Hayes, A. W. Co-organize with R. Cook, R. L. Dixon and D. Eckerman. 1981. Target Organ Toxicity: Eye and Other Special Senses. February 2-3. Washington, DC.

Hayes, A. W. 1981. Toxicology from the Viewpoint of Academia and Industry. 6<sup>th</sup> Annual Workshop on Industrial Toxicology. Thomas Jefferson University. Philadelphia, PA, April 1.

Hayes, A. W. and P. K. Chan. 1981. The Toxicity and Metabolism of Penicillic Acid. Mycotoxin Symposium, American Oil Chemists Society. New Orleans, LA, May 20.

Hayes, A. W. 1981. Are Chemicals Safe? Annual Meeting of the Faculty of the Vocational-Technical School. Lansdale, PA. October 28.

Hayes, A. W. 1981. Implications of Mycotoxins in Human Health. Annual Meeting of the American Society for Microbiology. Atlanta, GA, March 12.

Hayes, A. W. 1982. Reproductive Hazards. Occupational Health Conference. Toronto, Canada, March 12.

Hayes, A. W. 1982. Chairman, Symposium on Current Concerns in Environmental Pharmacology and Toxicology, ASPET/SOT Meeting. Louisville, KY, August 16.

Watson, S. A., C. J. Mirocha and A. W. Hayes: 1982. Yellow rain, What is it? Symposium "Current Concerns in Environmental Pharmacology and Toxicology," ASPET/SOT Meeting, August 16, 1982. Louisville, KY, August 16.

Hayes, A. W. 1982. Toxicity of Penicillic Acid. International Symposium Pretoria, South Africa, July 12.

Hayes, A. W. 1982. Chemical Carcinogenesis. Toxicology for Chemists Symposium, American Chemical Society. Philadelphia, PA. October 23.

Hayes, A. W. 1982. Chemical Carcinogenesis. Technician Activities Group. American Chemical Society. Spring House, PA, March 12.

Hayes, A. W. 1983. Reproductive Hazards. Occupational Health Conference. Washington, DC, March 15.

Hayes, A. W. 1983. Increased Awareness of Mycotoxins other than Fusarium toxins. American Phytopathological Society. Ames, IA, June 27.

Hayes, A. W. 1983. Mycotoxins in Human Health. Gordon Research Conference. Toxicology and Safety Evaluations. Kimboll Union Academy, NH, August 3.

Hayes, A. W. 1983. Toxicology of Agents Used in Decontamination of Chemical Poisons. San Diego, CA, August 26.

Hayes, A. W. 1983. Reproductive Toxicology and Teratology. Toxicology Safety Professionals. New Orleans, LA, October 31.

Hayes, A. W. 1985. The Kidney as a Target Organ. MITRA Symposium. McClean, VA, March 13.

Hayes, A. W. 1985. Chairman, New Approaches in Risk Assessment. SOT Symposium. San Diego, CA, March 20.

Hayes, A. W. 1985. Toxicology and Hazardous Waste. American Chemical Society Hazardous Waste Symposium. Winston-Salem, NC, March 27.

Hayes, A.W. 1986. Role of Mycotoxins in Human Diseases. Southeastern Regional Chapter, Society of Toxicology. Athens, GA, September 4.

Hayes, A. W. 1987. Role of Mycotoxins in Human Diseases. Symposium on Mycotoxins. Medical College of Virginia. Richmond, VA, April 23.

Hayes, A. W. 1987. Symposium Goals, Extrapolation Modeling of Inhaled Particles and Gases: Lung Dosimetry. Duke University Medical Center. Durham, NC, October 8.

Hayes, A. W. 1990. The Animal Bioassay. Symposium on Carcinogenesis. American Chemical Society. Washington, DC, October 20.

Hayes, A. W. and J. Sagartz. 1990. Premier: A Case History. Investigative Team Approaches to Toxicologic Problems. Society of Toxicology and Society of Toxicologic Pathologist. Chicago, IL, November 9.

Hayes, A. W. 1991. Industrial Chemical: Issues Involving Toxicology Data. Symposium on Industrial Toxicants. American Chemical Society. Atlanta, GA, April 16.

Hayes, A.W. 1992. Corporate Research Management. Society of Research Administrators. Orlando, FL, September 14.

Hayes, A. W. 1994. Chemical Hazards, Occupational Health and Safety in Research Animal Facilities. American College of Laboratory Animal Medicine Forum. Stone Mountain, GA, April 18.

Hayes, A. W. 1995. Toxicology and the Clean Air Act. Aspen Medical Conference, Aspen, CO, Sept. 7.

Hayes, A. W. 1996. The Need of Alternatives in Toxicology Testing. Plenary Lecture. 1st Croatian Congress of Toxicology. Zagreb, Croatia, April 17.

Hayes, A. W. 1996. The Gillette Environmental Leadership Program, White House Conference on the Environment, Washington, D.C., April 30,

Hayes, A. W. 1996. Risk Assessment: Acute and Chronic Effects. International Symposium on Risk Assessment. Bangkok, Thailand, September 9, 1996.

Hayes, A. W. 1996. Risk Assessment of Consumer Products. International Symposium on Risk Assessment. Bangkok, Thailand, September 1 Q, 1996.

Hayes, A. W. 1996. Safety Assessment. International Symposium on Risk Assessment. Bangkok, Thailand, September 10' 1996.

Hayes, A. W. 1999. The Robert E. and Charlotte Londer Endowed Executive Professor Leadership Culverhouse College of Commerce and Business Administration. University of Alabama, Tuscaloosa, Alabama, September 14, 1999.

Hayes, A. W. 1999. Keynote Speaker, Environmental Health and Safety. 15<sup>th</sup> Environmental Affairs Conference. Chemical Specialties Manufacturers Association. Boston, MA, October 15, 1999.

Hayes, A. W. 1999. Industrial Biomarkers: A Safe Workplace. The 4<sup>th</sup> Congress of Toxicology in Developing Countries. Antalya, Turkey, November 8, 1999.

Hayes, A. W. 2000. Toxicology, An Environmental Science. Russian Academy of Sciences. St. Petersburg, Russia, February 22, 2000.

Hayes, A. W. 2000. Waste Management, The Gillette Approach. Irish Society of Toxicology Annual Meeting. Galway, Ireland, April 8, 2000.

Hayes, A. W. 2000. A Safe Workplace, Plenary Lecture, 2<sup>nd</sup> Croatian Congress of Toxicology. Pula, Croatia, April 10, 2000.

Hayes, A. W. 2000. A Primer In Risk Assessment. Massachusetts Association of Science Supervisors. Boston, MA, May 3, 2000.

Hayes, A. W. 2000. A Safe Workplace (Sitio Seguro de Trabajo), Plenary Lecture, Latin American Congress of Toxicology. Maracay, Venezuela, July 19, 2000.

Hayes, A. W. 2001. Environmental Insurance, Commonwealth of Massachusetts. Boston, MA, January 24, 2001

Hayes, A. W. 2001. Implementation And Compliance Of Risk Assessment. 9<sup>th</sup> International Congress of Toxicology. Brisbane, Australia, July 8, 2001.

Hayes, A. W. 2001. Application Of Risk Assessments In The Workplace, Plenary Lecture, Biotechnology and Environment. Zagreb, Croatia, February 22, 2001.

Hayes, A. W. 2001. Alternatives In Consumer Product Testing. 1<sup>st</sup> Caribbean And Latin American Workshop On Alternative Methods. San Diego, Cuba, December 4, 2001.

Hayes, A. W. 2004. The Precautionary Principle, Plenary Lecture, 3<sup>rd</sup> Croatian Congress of Toxicology, CROTOX 2004. Plitvice Lakes, Croatia, May 27, 2004

Hayes, A.W. 2005. Alternatives in Toxicology and Veterinary Medicine. Veterinary Faculty, University of Ljubljana, Ljubljana, Slovenia, April 24, 2005.

Hayes, A. W. 2005. Cornerstones of Toxicology. William D. Waddell Lectureship, University of Louisville School of Medicine, Louisville, KY, May 26, 2005

Hayes, A. W. 2005. Occupational Health, 1<sup>st</sup> Annual Philip Chambers Lecture, Irish Society of Toxicology, Dublin, Ireland, October 13, 2005.

Hayes, A.W. 2005. Cornerstones of Toxicology, 1<sup>st</sup> Dr. CR Krishna Murli Honour Lecture, International Conference on Toxicology, Environmental and Occupational Health, Lucknow, India, November 14, 2005

Hayes, A. W., 2006. 1<sup>st</sup> Annual Merit Award Lecture, Annual Meeting of the Society of Toxicology, San Diego, CA, March, 2006

Hayes, A. W., 2006, Education in Toxicology, 5<sup>th</sup> Annual Meeting of the Asian Society of Toxicology, Ha Zhu, China, April, 2006

Hayes, A. W., 2006, Principios Precautorios, XII Congreso Asociacion Latino Americana De Toxicologia (ALATOX), Santiago De Chile, August 2006

Hayes, A. W., 2006, Certification of Toxicologist in the United States, XII Congreso Asociacion Latino Americana De Toxicologia (ALATOX), Santiago De Chile, August 2006

Hayes, A. W., 2006, Cornerstones of Toxicology, 6<sup>th</sup> International Congress, Turkish Society of Toxicology, Antalya, Turkey, November, 2006

Hayes, A. W. (with C. Kruger). 2007, Risk Assessment Approaches for Bioactive Food Ingredients. CEC, EUROTOX, Amsterdam, The Netherlands, October, 2007.

Hayes, A. W. (with C. Kruger). 2007. Strategies for Drug Delivery Platforms. Drug Law, Washington, D.C., December, 2007

Hayes, A. W. 2008. Recommendations from an International Workshop on In Vitro Methods for Assessing Acute Systemic Toxicity, Workshop on Acute Chemical Safety Testing: Advancing In Vitro Approaches and Humane Endpoints for Systemic Toxicity Evaluations, NIEHS, Bethesda, MD, February 6-7, 2008

Hayes, A. W. 2009. Cornerstones of Toxicology, Tox Expo 2009. St John's University, Queens, New York, April 29, 2009

Hayes, A. W. 2009, Effects of the Environment on Diseases. 6<sup>th</sup> Congress of Toxicology in Developing Countries, Keynote Lecture, Sun City, South Africa, September 7, 2009

Hayes, A. W, 2009. Toxicology Made Simple, Plenary Speaker, Northeast Chapter, Society of Toxicology, Cambridge, MA, October 16, 2009

Hayes, A.W. 2010. Cornerstones of Toxicology. Risk Analysis Course, Harvard School of Public Health, Boston, MA, March 14, 2010.

Hayes, A. W. 2010. Principles of Toxicology, Keynote Lecture, 1<sup>st</sup> Annual Toxicology for Industrial and Regulatory Scientists (ACT), Falls Church, VA. April 26, 2010.

Kruger, CL, Lu, Y, and Hayes, AW. 2010. GOS and Laxation. The 9<sup>th</sup> Vahouny Fiber Symposium, Bethesda, MD. June 9, 2010.

Hayes, A. W. 2010. Where is the U.S. in Its Training Programs in Safety Pharmacology. Mni-Symposium: Safety Sciences: Education and Training. FIP Pharmaceutical Sciences 2010 World Congress, New Orleans, November 17, 2010.

Kruger, CL, Y. Lu and A. W. Hayes. 2011. Plenary Session 6: Contaminants in Fish Oils. GOED Exchange, Salt Lake City, UT January 14, 2011

Hayes, A.W. 2011. Cornerstones of Toxicology. Risk Analysis Course, Harvard School of Public Health, Boston, MA, March 21, 2011.

Hayes, A. W. 2011. Principles of Toxicology, Keynote Lecture, 2<sup>st</sup> Annual Toxicology for Industrial and Regulatory Scientists (ACT), Falls Church, VA. May 16, 2011.

Hayes, A.W. 2012. Principles of Toxicology. Risk Analysis Course, Harvard School of Public Health, Boston, MA, March 19, 2012.

Hayes, A.W. 2012. Plenary Session, American Board of Toxicology. A Paroramic view of toxicology pathology. 4th Symposium of the Latin American Society of Toxicologic Pathology, Sao Paula, Brazil, March 30, 2012.

Hayes, A. W. 2012. Alternative Models.. A Paroramic view of toxicology pathology. 4th Symposium of the Latin American Society of Toxicologic Pathology, Sao Paula, Brazil, March 30, 2012.

Hayes, A. W. 2012. Principles of Toxicology, Keynote Lecture, 2<sup>st</sup> Annual Toxicology for Industrial and Regulatory Scientists (ACT), Falls Church, VA. April 23, 2012

Hayes, A. W. and C.L. Kruger. 2012. Risk/Benefit Analysis and Communication Session. Challenges for Omega-3 ( $\omega$ -3 fatty acids or n-3 fatty acids) Intake. GOED Exchange 2012. Boston, MA, June 7, 2012

Hayes, A.W. 2012. Primer in Toxicology, Ambassador Award, Mid-Atlantic Society of Toxicology, New Jersey, September 14, 2012.

Hayes, A. W. 2012. The Road Traveled, Distinguished Scientist Award, American College of Toxicology, Orlando, FL, November 20, 2012

Hayes, A.W. and C.L. Kruger, 2013. Critical elements for a Bioassy. The Carcinogenesis Bioassay in 2013. Key Elements and Best Practices. Winter Toxicology Forum. Washington, DC. January 31, 2013

Hayes, A.W. 2013. Principles of Toxicology. Risk Analysis Course, Harvard School of Public Health, Boston, MA, March 11, 2013.

Hayes, A. W. 2013. Principles of Toxicology, Keynote Lecture, 3<sup>st</sup> Annual Toxicology for Industrial and Regulatory Scientists (ACT), Gaithersburg, MD, April 2, 2013

Hayes, A.W. 2013. Risk Assessment Issues and Challenges: Defining the questions and obtaining the data. International Congress of Toxicology, XIII, Seoul, Korea, June 30, 2013.

Hayes, A. W. 2013. Introduction to the Toxicology of Methylmercury and Balancing the Risks and Benefits. Debunking the Risk Myths: Seafood's Success Story. Annual Meeting of International Food Technology, July 16, 2013. Chicago, IL

Hayes, A. W. 2013. Basic Principles of Toxicology. Practical Application of Toxicology (ACT). Edinburgh, Scotland, UK, September 9, 2013

Hayes, A.W. 2014. Principles of Toxicology. Risk Analysis Course, Harvard School of Public Health, Boston, MA, March 11, 2014.

Hayes, A. W. 2014. Principles of Toxicology, 4<sup>st</sup> Annual Toxicology for Industrial and Regulatory Scientists (ACT), Gaithersburg, MD, April 28, 2014

Hayes, A. W. 2014. Basic Principles of Toxicology. Practical Application of Toxicology (ACT). Edinburgh, Scotland, UK, September 15, 2014

Hayes, A.W. 2014. Why EPA's Review of Pesticides Is, or Is Not, a Model for FDA's Reviews of the Safety of GRAS Ingredients. A Workshop on GRAS Determinations. Washington, DC, October 14, 2014.

Hayes, A. W. 2014. Food Contamination, GMO/GEO and Food Safety. Harvard China Food Safety Monitoring & Risk Assessment Training Program. Boston, MA, December 8, 2014

## **INVITED SEMINARS**

Department of Science, Judson College, Marion, Alabama 4/30/72

Department of Pharmacology and Medicinal Chemistry, College of Pharmacy, University of Illinois at the Medical Center, Chicago, Illinois 5/4/72

Department of Biochemistry, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 7/7/72

Department of Animal Sciences, Rutgers University, New Brunswick, New Jersey 7/13/72

Lederle Laboratories, American Cyanamide Company, Pearl River, New York 8/8/72

Department of Microbiology, University of Surrey, Surrey, England 8/15/72

Mason Research Institute, Worcester, Massachusetts 1/4/73

Riker Laboratories, Inc., 3M Center t St. Paul, Minnesota 2/11/73

Batelle Columbus Laboratories, Columbus, Ohio 7/13/73

Department of Botany and Microbiology, Auburn University, Auburn, Alabama 4/19/74

National Animal Disease Laboratories, United States Drug Administration, Ames Iowa 5/18/74

Bureau of Foods, Food and Drug Administration, Washington, D.C. 10/31/74

Department of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, Mississippi 6/20/75

Central Veterinary Laboratories, Ministry of Agriculture, Food and Fisheries, Weybridge, England 9/20/76

Department of Biochemistry, University of Mississippi Medical Center, Jackson, Mississippi  
10/20/76

Department of Pharmacology, School of Pharmacy, University of Mississippi, Oxford,  
Mississippi 3/18/77

Pathology Department, Central Veterinary Laboratory, New Haw, Weybridge, United Kingdom  
6/19/77

Department of Biochemistry, Burnell University, Uxbridge, Middlesex, United Kingdom 6/17/77

MRC Toxicology Unit, Medical Research Council Laboratories, Carshalton, Surrey, United  
Kingdom 6/12/77

Department of Biochemistry, University of Surrey, Guilford, Surrey, United Kingdom 6/12/77

Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 1 Epidemiology,  
Virology and Toxicology Sections, Center for Disease Control, Atlanta, Georgia 10/12/77

Biochemistry and Microbiology Departments, University of Alabama, Tuscaloosa, Alabama  
2/11/78

Microbiology Department, University of Mississippi Medical Center, Jackson, Mississippi  
2/13/78

Department of Biochemistry and Community Medicine, School of Medicine, University of  
California, Irvine, California 3/17/78

Mississippi State Diagnostic Laboratory, Jackson, Mississippi 3/22/78

Toxicology, Health Safety Division, Abbott Laboratories, Chicago, Illinois

Department of Biochemistry, School of Medicine, Vanderbilt University, Nashville, Tennessee  
6/13/78

Department of Physiology and Biophysics, University of Mississippi Medical Center, Jackson,  
Mississippi 7/12/78

Department of Pediatrics, College of Medicine, University of Cincinnati, Cincinnati, Ohio  
7/19/78

Southern Regional Research Laboratory, United States Drug Administration, New Orleans,  
Louisiana 8/23/78

Health Affairs, Allied Chemical Corporation, Morristown, New Jersey 9/7/78

Tougaloo College, Jackson, Mississippi 9/20/78

Department of Pathology, University of Wisconsin Medical School, Madison, Wisconsin  
10/26/78



Distinguished Visitors Program, University of California, Davis, California 2/22/79

Department of Pharmacology, Medical College of Virginia, Richmond, Virginia 4/23/80

Department of Pharmacology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 9/25/80

Center in Toxicology, Michigan State University, East Lansing, Michigan 11/13/80

Department of Biology, University of Alabama, Tuscaloosa, Alabama 12/2/80

School of Pharmacy, Temple University, Philadelphia, Pennsylvania 4/1/81

Toxicology Program, Philadelphia College of Pharmacy and Science, Philadelphia, Pennsylvania 4/30/81

Department of Communitive Medicine, School of Medicine, Rutgers University, New Brunswick, New Jersey 5/6/8

Department of Biostatistics, School of Public Health, Harvard University, Boston, Massachusetts 9/25/81

Department of Pharmacology, Medical College of Virginia, Richmond, Virginia 10/21/81

Department of Physiology and Biophysics, Temple University, Philadelphia, Pennsylvania 11/22/81

Department of Microbiology, Howard University, Washington, D.C. 2/12/82

Toxicology Program, University of Wisconsin, Madison, Wisconsin 4/13/82

Department of Comparative Medicine, Schools of Medicine and Veterinary Medicine, Ohio State University, Columbus, Ohio 6/28/82

Toxicology Program, School of Public Health, University of Michigan, Ann Arbor, Michigan 10/18/82

Department of Pharmacology, Thomas Jefferson School of Medicine, Philadelphia, Pennsylvania 10/20/82

School of Pharmacy, Temple University, Philadelphia, Pennsylvania 4/13/83

Toxicology Program, Cornell University, Ithaca, New York 12/2/83

Department of Pharmacology, Michigan State University, East Lansing, Michigan 2/15/84

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Institute of Public Health, Republic of Slovenia, Ljubljana, Stovenia 2/26-27/01

School of Public Health, Harvard University, Boston, MA 4/11/01

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2014, Edinburgh)